

*"This conference will long be remembered as the one that reshaped our ideas of how we design our facilities..."*

—Gloria Jeff, Deputy Administrator, Federal Highway Administration

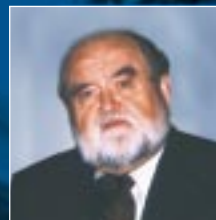


*"I challenge you to help define a process which will lead to excellence, which produces a project that is carefully, imaginatively designed, serves traffic demand, provides safety for our customers, respects the natural and man-made environments, is viewed as an asset to those who use it, and whose design has the input of professionals and customers alike."*

—Parker F. Williams, Administrator, Maryland State Highway Administration

*"Have the confidence to use flexible design—push yourself beyond what you think is great—there is something better out there. You have a role in daily history—you're making a big impact wherever you go."*

—Susanna Massie Thomas, The Shakertown Coalition/Bluegrass Tomorrow, Harrodsburg, KY



*"Aesthetic, community-sensitive design is where our nation wants to go and we should go with them."*

—Francis B. Francois, Executive Director, American Association of State Highway and Transportation Officials

## THINKING BEYOND THE PAVEMENT



*A National Workshop on Integrating Highway Development with Communities and the Environment while Maintaining Safety and Performance.*

Held at the University of Maryland Conference Center in May of 1998, Thinking Beyond the Pavement provided a landmark opportunity for 325 invited participants from 39 states and the District of Columbia to develop a vision of excellence in highway design for the 21st Century. Participants included chief engineers, senior designers and planners from 29 state departments of transportation, representatives of national transportation organizations, and a variety of stakeholders from government, the private sector, and citizens' organizations.

# Thinking Beyond the Pavement

## THINKING BEYOND THE PAVEMENT

**A National Workshop on Integrating Highway Development with Communities and the Environment while Maintaining Safety and Performance.** The workshop was developed under the leadership of Parker F. Williams, Administrator, Maryland State Highway Administration; Tony Kane, Executive Director, Federal Highway Administration; and Francis B. Francois,

Executive Director, American Association of State Highway and Transportation Officials (AASHTO). They formed an advisory committee of some 40 organizations to help define the direction and content of the conference, including professional associations, local and state government, regulatory agencies, and safety, environmental, scenic, historic preservation, and bicycle groups.

***“In the beginning of the interstate era, we built the greatest freeway system in the world; but aesthetics and preserving the environment weren't part of that mission. Now we need another transformation. We're here to define a new vision, to change how we do business.”***



– Tom Warne,

Executive Director, Utah Department of Transportation  
Chairman, AASHTO Standing Committee on Highways

### ***Design Excellence –***

Mobility



Safety



Enhancement of  
the Natural  
Environment



Preservation of  
Community Values



*Design Excellence:* Simultaneously advancing the objectives of safety, mobility, enhancement of the natural environment, and preservation of community values.

***“For the highway professional, the payoff of partnering with the community is huge. Projects get done faster and, since everyone is working toward a common goal, it's a lot more fun.”***

– Jim Byrnes,

Chief Engineer, Connecticut Department of Transportation

***“Visionary leadership is the ability to motivate others to move with a passion toward a common goal. The purpose of this conference is to refine such a vision for transportation systems. This conference calls on all stakeholders in transportation issues to assume personal leadership – to see conflicting values respectfully and then to seek a shared set of values.”***

– Jim Dalton,

Strategic Counsel, Opening Plenary Speaker

### ***What is a stakeholder?***

A "stakeholder" is anyone who has something at stake in a specific policy or particular project; for instance, the neighbors whose yards back up to a roadway, the senior citizens who like to drive slowly on a given street to reach an activity center, the subcontractors of the municipal services agency responsible for maintaining the landscape median strips –really all who use or are affected by the facility.

# Workshop Participants' Vision

The workshop's goals were clear and focused. Drawing on the experience and vision of the participants, the conference planners sought to:

- Find and publicize the best ways of integrating highways with their communities and the environment while maintaining safety and performance;
- Encourage continuous improvement in design of transportation projects across the nation, balancing all of our customers' concerns, whether transportation related or not; and,
- Achieve flexible, context-sensitive design in all projects.

## What the Conference Developed:

- A consensus on the qualities of projects and the characteristics of the highway development process which could integrate transportation facilities with communities and the environment; and
- Implementation actions to overcome barriers to context-sensitive design, to educate transportation professionals and stakeholders on this approach to design, and to encourage its application to all projects.

## THE WORKSHOP PARTICIPANTS' VISION:

### *Qualities of Excellence in Transportation Design:*

- The project satisfies the purpose and needs as agreed to by a full range of stakeholders. This agreement is forged in the earliest phase of the project and amended as warranted as the project develops.
- The project is a safe facility both for the user and the community.
- The project is in harmony with the community and preserves environmental, scenic, aesthetic, historic and natural resource values of the area, i.e., exhibits context-sensitive design.
- The project exceeds the expectations of both designers and stakeholders, and achieves a level of excellence in people's minds.
- The project involves efficient and effective use of resources (time, budget, community) of all involved parties.
- The project is designed and built with minimal disruption to the community.
- The project is seen as having added lasting value to the community.

## THE WORKSHOP PARTICIPANTS' VISION:

### *Characteristics of the Process Which Would Yield Excellence:*

- Communication with all stakeholders is open and honest, early and continuous.
- A multi-disciplinary team is established early, with disciplines based on the needs of the specific project and with the inclusion of the public.
- A full range of stakeholders is involved with transportation officials in the scoping phase. The purposes of the project are clearly defined and consensus on the scope is forged before proceeding.
- The highway development process is tailored to the circumstances. A process is employed that examines multiple alternatives and that will result in consensus on approaches.
- A commitment to the process from top agency officials and local leaders is secured.
- The public involvement process, which will include informal meetings, is tailored to the project.
- The landscape, the community, and valued resources are understood before engineering design is begun.
- A full range of tools for communication about project alternatives is used (e.g., visualization).

## Context-Sensitive Design

...is another way of saying "to think beyond the pavement" about the impact a travelway will have on the area it traverses, including the people who live, work, or pass through the area. Context-sensitive design asks questions first about the need and purpose of the transportation project, and then addresses equally: safety, mobility, and the preservation of scenic, aesthetic, historic, environmental, and other community values. Context-sensitive design involves a collaborative, interdisciplinary approach in which citizens are part of the design team.

# The Workshop

**Thinking Beyond the Pavement** – The Workshop presented case study examples from all parts of the United States, including examples of the types of projects found in every state: freeway design, suburban and rural roads, the commercial arterial, bridges and their approaches, and a small town Main Street. Cases were presented by principals in each project.

## CASE STUDY: A Suburban Commercial Artery: International Boulevard, Phase 1, City of SeaTac, WA

SeaTac, a city of 23,000 whose boundaries encompass the Seattle-Tacoma International Airport, developed in the early 1990's a Comprehensive Plan and a Transportation Plan which established a scheme for land use and proposed transportation facility improvements.

The Transportation Plan proposed that International Boulevard be expanded to increase traffic capacity and improve pedestrian access. It called for a major emphasis on aesthetics to change the area's appearance from a tacky commercial strip to an attractive gateway not only for residents, but also for some 24 million visitors arriving annually.

Phase 1 reconstruction comprised 6,500 feet and cost \$7.3 million; in order to keep its funding the project had to go to bid within 15 months.

### IMPORTANT POINTS:

- Major stakeholders were involved from the inception of the project and played a critically important role for their support and their ideas.
- The comprehensive plan and transportation plan were developed in a traditional manner and failed to completely reflect community members' goals. Highway designers and community stakeholders came together to develop a revised vision for the project with mutually inclusive goals: appearance, pedestrian and bicycle uses, land uses, and funding. Community consensus developed for a six-lane rather than a seven-lane facility to serve local capacity, not regional capacity.
- The 15-month completion schedule was met.
- During Phase 1 the state DOT was concerned that meeting stakeholder goals would require a change to design standards. As the project went on, they realized that a flexible approach led to creative solutions which met both stakeholder goals and design standards.

### Safety Sessions

***“We've got to train our staffs to understand the operational and safety effects of highways.. We also need training in the human relations aspects of our jobs.”***

– Leon Kenison, Commissioner, New Hampshire DOT; Chairman, AASHTO Standing Committee on Safety



“I myself didn't realize what a dramatic change we were about to make to this environment.”

– Roger Mason, Project Manager, Consultant

### Safety Session

*“When we have a challenging project, we should think of the process features needed to accomplish a winning solution. We should go in not with the idea that we may need design exceptions, but that perhaps we need to develop exceptional design criteria for that project. Part of the process should involve the appropriate stakeholders in discussion of what those criteria ought to be.”*

– Tim Neuman, Consultant

### Funding Sessions

*“The cost of context-sensitive design is not the issue. The demand for this type of design has become an expectation of our society. Spending more time up front planning with community involvement will save costs—and time—by not having to redesign later.”*

– Summary Report, consensus of participants

### AASHTO Acceptance

*“Context-sensitive design is a mindset and an evolutionary idea for the future. For this to be successful within the next two years, we've got to now work toward AASHTO acceptance of the “Flexibility in Highway Design” publication. In order for implementation to be successful, designers must buy into the concept of context-sensitive design.”*

– Ken Warren is the Executive Director, Chief Administrative Officer of the Mississippi Department of Transportation

Eighteen other sessions explored key issues facing transportation designers, such as: barriers to context-sensitive design, how to integrate community values, funding, safety, flexible approaches to achieving goals, public involvement, liability, project development, "smart growth," and related topics.

## CASE STUDY: A Small Town Main Street: East Main Street Reconstruction Project (Rt. 32), Westminster, MD

Envisioned as a typical 40-foot section with two 12-foot traffic lanes and two 8-foot parking lanes, the first design proposal would have narrowed existing sidewalks and required the removal of 42 mature trees. Citizen opposition led to a complete redesign and a stakeholder task force to work with the design team. The cross section was reduced to 36 feet, allowing for ample sidewalks, retention of most trees, and an overall ambience in harmony with the historic character of Westminster.



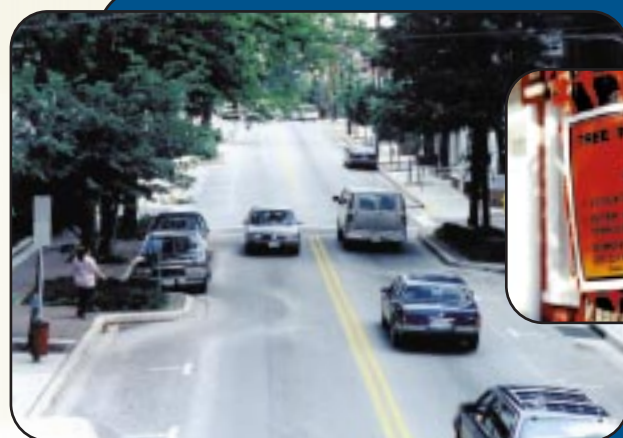
### IMPORTANT POINTS:

- The broad stakeholder involvement in the project was critically important.
- The redesign of the project involved breaking down many barriers to a flexible design approach, including institutional ones. Where traditionally the designers handed off the project to the construction engineer, here the designers worked with the construction engineer to be sure the consensus goals and objectives of the project were met. The result was more teamwork throughout the construction phase.
- Utility relocation work done in advance of roadway construction, performed under a separate contract from the highway work, was not well coordinated in terms of communications with affected property owners and rerouting of traffic. Once the task force brought utility decision-makers into the task force discussions, project coordination and communication improved.

### Liability Sessions

***“The new statute (23 USC 109, as stated on page 6) gives broader authority for design issues than has ever been presented to engineers before, taking into consideration environmental, scenic, aesthetic, historic, community and preservation impacts. You could go back to your local jurisdictions and ask for someone to adapt the federal code to the state system.”***

– Pamila Brown, formerly Deputy Counsel to the Maryland State Highway Administration



The design team made decisions tree-by-tree to determine which should be saved and how much parking could be provided.

### SeaTac

***“We have to get the focus off SOVs (single occupancy vehicles), and become more conscientious about incorporating other modes of transportation.”***

– Don Monaghan, Assistant Director, Public Works, City of SeaTac

### East Main Street

***“The Task Force didn't vote. We worked to build consensus, which was far more important than voting and having some people feel that they had lost.”***

– Tom Beyard, City Director of Public Works, Westminster, MD

### East Main Street

***“We established goals and developed design concepts with the task force from building face to building face rather than from curb to curb. We considered lane widths in light of the whole road as it passes through the town. If we went from 10-foot lanes to 11-foot, would the impact on pedestrians, on trees, on the entire context be worth that extra foot? Everyone developed an understanding of the implications, and we were able to reason together.”***

– Dan Uebersax, Landscape Architect, Maryland State Highway Administration

### Functional Classification Session

***“Functional Class and design speed don't have an automatic relationship. Functional classifications should be established with an eye to future planned development. There is a need for new classifications for scenic and historic country roads, with increased federal funding eligibility.”***

– Neil Pedersen, Director, Planning, Maryland State Highway Administration

## THINKING BEYOND THE PAVEMENT: Conclusions

Beginning with the keynote speakers and continuing session by session, contributors and participants in the workshop made it clear that highway development professionals are facing major changes in the way we approach the design process, changes which have been rising to the surface for many years. The time has come to embrace a new philosophy of dealing with the public that uses, and pays for, the highways we create. Francis B. Francois, Executive Director of AASHTO, stated it most clearly: "Aesthetic, community-sensitive design is where our nation wants to go, and we should go with them." Barriers to context-sensitive design are many. Traditional organizational roles tend to segment responsibility rigidly, narrowing the range of potential responses and boxing participants into conventional solutions. The application of uniform design standards creates a powerful implication that anything different is somehow sub-

standard when, in specific cases, just the opposite may well be true. Communities either have not clearly articulated their values and vision, or are not asked to do so until too late in the process, when their only recourse is to protest—strenuously.

The transformation to context-sensitive design requires no less than the transformation of the highway development process—a new philosophy, culture and organizational structure. Responsive solutions must address both sides of the design process: what can be done technologically, and what may be done to improve the lives of the surrounding citizens and their environment. There is, too, a need for more and better communication within our industry and with the public. Examples of the best designs should be published and shared in conferences such as this one. Consensus-building techniques and process improvements must also be promoted, so that communities can gain confidence that the standard procedures of the nation's highway builders will reliably produce outstanding designs.

Fifty states, the Federal Highway Administration, hundreds of regulatory and advisory agencies, thousands of local governments and hundreds of thousands of people of all backgrounds are involved in the highway development process. Success will require a transformation within almost all of them. The foundation has already been laid. Some basic legislative barriers to context-sensitive design have already been removed, and new empowerments granted, by the language of 23 USC 109 (below). The FHWA's report, *Flexibility in Highway Design*, discusses context-sensitive design in relation to existing AASHTO design standards, *A Policy on Geometric Design of Highways and Streets* ("The Green Book"). Advocacy and regulatory organizations are ready to support changes as well, as indicated by their enthusiastic role in the formation and presentation of this conference.



Left to Right:  
Bob Skinner, Executive Director, Transportation Research Board  
David L. Winstead, Maryland Secretary of Transportation; President, AASHTO  
Tony Kane, Executive Director, FHWA

### United States Code

#### Title 23

#### §109 Standards

- (a) In general. The Secretary shall ensure that the plans and specifications for each proposed highway project under this chapter provide for a facility that will—
    - (1) adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance; and
    - (2) be designed and constructed in accordance with criteria best suited to accomplish the objectives described in paragraph (1) and to conform to the particular needs of each locality.
  - • •
  - (c) Design criteria for National Highway System. (1) In general. A design for new construction, reconstruction, resurfacing (except for maintenance resurfacing), restoration, or rehabilitation of a highway on the National Highway System (other than a highway also on the Interstate System) may take into account, in addition to the criteria described in subsection (a)—
    - (A) the constructed and natural environment of the area;
    - (B) the environmental, scenic, aesthetic, historic, community, and preservation impacts of the activity; and
    - (C) access for other modes of transportation.
  - (2) Development of criteria. The Secretary, in cooperation with State highway departments, may develop criteria to implement paragraph (1). In developing criteria under this paragraph, the Secretary shall consider the results of the committee process of the American Association of State Highway and Transportation Officials as used in adopting and publishing "A Policy on Geometric Design of Highways and Streets", including comments submitted by interested parties as part of such process.
- • •

## THE CONTEXT-SENSITIVE DESIGN PHILOSOPHY: Taking Action

The conference produced a list of specific implementation recommendations, along with suggestions of who should undertake them:

### AASHTO

- Amend the FHWA publication *Flexibility in Highway Design* to expand information on safety and liability issues; adopt it as an AASHTO companion to *A Policy on Geometric Design of Highways and Streets* ("The Green Book").
- Encourage states to adopt Federal language into their own policies from 23 USC 109, to include environmental, scenic, aesthetic, historic, community and preservation criteria in projects, along with safety and mobility.
- Advance the philosophy of context-sensitive design in the strategic plans of AASHTO committees.
- Work with the FHWA and advocacy and regulatory organizations to change Federal regulations that discourage context-sensitive design.
- Create a more efficient process for incorporating research findings into policy and *The Green Book*. Dependence on volunteer review of research in the midst of a recent surge of research yields a very slow pace of change.
- Work with the FHWA and individual states to spread word of this conference and to develop training programs.

### The States

- Adopt 23 USC 109 language to encourage context-sensitive design.
- Review procedures, organizational structure and staffing to encourage and institutionalize context-sensitive design.
- Develop educational programs for staff and consultants that develop the necessary attitudes and skills to carry out context-sensitive design, including highway design, communication skills and process improvements.
- Provide the tools necessary for context-sensitive design, including 3D presentation tools.

### Regulatory Organizations

- Establish partnering relationships with transportation interest groups that will reliably produce context-sensitive designs from the beginning of the design process.

### Advocacy Organizations

- Connect to the dialogue among transportation interest groups to ensure that concerns about safety, liability, the environment and other issues are properly reflected.

### Researchers

- Identify where research will enable context-sensitive design, such as by providing information on the life cycle costs of landscaping; develop faster ways to put safety research results into the hands of practitioners.

### Academics and Professional Organizations

- Create course work and conferences that examine context-sensitive design; provide the skills for individuals to become creative, productive members of a transformed highway development process.



The intersection of Clematis and Narcissus Streets in West Palm Beach, FL, used to be "quite ugly," says City Transportation Planner Ian Lockwood. When the intersection was razed and redesigned with brick pavers, bollards and well-designed benches, area retail rents increased 500%.

## THE ROLE OF THE INDIVIDUAL

Transforming the highway development process comes down, in the end, to individuals in cooperation with other individuals, making decisions about highway elements. Everyone has a role in this process, whether as an agency administrator setting policy; as a professional engineer, planner, or landscape architect making decisions on behalf of an agency or client; or as a regulatory reviewer, community activist, environmental advocate, or interested citizen. Transforming the highway development process will require each of us to acquire new skills in understanding values, in communicating, in creating innovative solutions, and in getting these designs funded and constructed. Design excellence flows directly from the design process itself, if excellence is explicitly set as a goal from the beginning. By doing so we will better ourselves and our professions as we better our communities.



## Thinking Beyond the Pavement

### QUESTIONS TO ASK OURSELVES:

1. What have I done in my organization to further the goal of context-sensitive design?
2. What tools do I need, and does my organization need, to achieve design excellence?
3. How can I carry the message of the conference to my organization?
4. How can I encourage my organization and my peers to begin the process of transformation?
5. How do I apply these ideas to my next project?

*In the pioneering case studies presented at Thinking Beyond the Pavement, we were looking at good projects, projects that succeeded at making the highway design sensitive to the context in which it was located. But there were ways in which each could have been better still. When we reach the point where all transportation professionals, through this new, collaborative way to design, are open to sharing the full range of their expertise, we will be able to do so much more than we can even now imagine.*

— Charles B. Adams, Director, Environmental Design  
Maryland State Highway Administration

### TO FIND OUT MORE:

For more details on Thinking Beyond the Pavement, a *Conference Summary* is available from the Maryland State Highway Administration by calling (410) 545-0361. The FHWA book, *Flexibility in Highway Design*, is available in limited quantities by calling (202) 366-0106. To get help, find others who are dealing with similar issues, or find out more about training programs, case study projects, or information sources contact [drose@sha.state.md.us](mailto:drose@sha.state.md.us)



## THINKING BEYOND THE PAVEMENT

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